

## REMARKS

In the Office Action dated November 14, 2002, the Examiner suggested designating Figure 1 with the legend "Prior Art", which has been done. The Examiner also required clarification of the elements indicated by reference numerals 1a and 15a in Figure 2, and such clarification has been undertaken by adding an arrowhead to the lead line proceeding from reference numeral 1a, since this designates the overall gradient coil system, whereas reference numeral 15a designates the cast resin carrier structure. The same change has been made in Figure 3 as well. Labels consistent with the written description in the specification have been added in each of Figures 1, 2 and 3, including designation of the carrier structure of 15a in Figure 2 as being cast resin, in response to the objection under 37 C.F.R. §1.83(a).

The drawings are therefore submitted to be in full compliance with all provisions of 37 C.F.R. §1.83 and Section 1.84.

A more descriptive title was required, which is submitted herein.

Claims 1-13 were rejected under 35 U.S.C. §112, second paragraph, as being incomplete because the Examiner stated a number of structural, cooperative relationships among the various claim elements should be included.

Claim 1 has been amended to include these relationships, and the amendments to claim 1 are believed to be self-explanatory. All of the claims are submitted to be in compliance with 35 U.S.C. §112, second paragraph.

Claims 1-10 were rejected under 35 U.S.C. §102(b) as being anticipated by Furukawa. In substantiating the rejection based on the Furukawa reference, the Examiner referred to the vacuum vessel that retains

the gradient system in the Furukawa reference as corresponding to the carrier structure of claim 1. In view of the aforementioned amendments to claim 1, wherein the carrier structure is specifically described as a structure which fixed the electrical conductor in a particular arrangement, Applicant respectfully submits that it is no longer justifiable to maintain that the vacuum vessel in Furukawa corresponds to the language of amended claim 1 in this regard.

The subject matter of the present application is directed to an electrical coil suitable for use as a gradient coil in a gradient system of a magnetic resonance apparatus, wherein an electrical conductor is carried, and fixed in a particular arrangement, by a carrier structure, and wherein a heat insulator is disposed between the electrical conductor and the carrier structure. No such arrangement is disclosed or suggested in the Furukawa reference.

The dependent claims have been editorially amended to better describe the different embodiments of Figures 2 and 3. In the embodiment of Figure 2, the electrical conductor and the cooling pipe of the cooling device are concentrically arranged, and therefore the section of the electrical conductor that has the heat insulator disposed between it and the carrier structure at least partially overlaps the section of the electrical conductor that is cooled by the cooling device.

In the embodiment of Figure 3, the section of the electrical conductor that has the heat insulator between it and the carrier structure does not overlap the section of the electrical conductor that is cooled by the cooling device. This is set forth in detail in claims 4 and 5 (directed to the embodiment of Figure 3) and claim 6 (directed to the embodiment of Figure

2). New claims 14 and 15 also have been added to describe these embodiments in more general terms.

Since the Furukawa reference does not disclose all of the elements of claim 1 as arranged and operating in that claim, the Furukawa reference does not anticipate claim 1, or any of the claims depending therefrom. All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Submitted by,



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SCHIFF, HARDIN & WAITE

**CUSTOMER NO. 26574**

Patent Department

6600 Sears Tower

233 South Wacker Drive

Chicago, Illinois 60606

Telephone: 312/258-5790

Attorneys for Applicant.

## **VERSION WITH MARKINGS TO SHOW CHANGES MADE**

### **IN THE CLAIMS:**

Claim 1 has been amended as follows:

1. (Amended) An electrical coil suitable for use as a gradient coil for a magnetic resonance apparatus, comprising:

at least one electrical conductor;

a carrier structure for said electrical conductor which fixes said electrical conduct or in a predetermined arrangement;

a cooling device component disposed in thermal communication with said electrical conductor for cooling said electrical conductor;

and

a heat insulator disposed between at least one section of said electrical conductor and said carrier structure.

Claim 2 has been amended as follows:

2. (Amended) An electrical coil as claimed in claim 1 wherein at least [one section] a portion of said conductor is a hollow cylinder adapted for guiding a flowing cooling medium therein.

Claim 3 has been amended as follows:

3. (Amended) An electrical coil as claimed in claim 1 wherein said section of said electrical conductor is a first section and wherein said cooling device component cools at least one second section of said electrical conductor.

Claim 4 has been amended as follows:

4. (Amended) An electrical coil as claimed in claim 3 wherein at least said one second section of said electrical conductor [cooled by said cooling device] proceeds in an edge region of a spatial extent of said coil.

Claim 5 has been amended as follows:

5. (Amended) An electrical coil as claimed in claim 3 wherein said coil has a spatial extent forming a hollow cylinder, and wherein said at least one second section of said electrical conductor [cooled by said cooling component] proceeds in a region of a front side of said hollow cylinder.

Claim 6 has been amended as follows:

6. (Amended) An electrical coil as claimed in claim 1 wherein said heat insulator surrounds said electrical conductor.

Claim 10 has been amended as follows:

10. (Amended) An electrical coil as claimed in claim 1 wherein said carrier structure includes elements for reducing a non-homogeneity of a magnetic field in which said carrier structure and said electrical conductor are disposed.